

obstructed image sensor comprises an artifact 370, for example the finger of the user is blocking the object to be imaged. In a further example embodiment, the blocking of the target to be imaged could result for example from a smudge or the like on the displaying surface or from a malfunction of an image sensor 240a-c. Accordingly, if the final image was formed following the method of FIG. 4a, the final image would also be at least partially disturbed.

[0079] FIG. 4b shows a flow chart of a method of an example embodiment. As hereinbefore described, at step 410 an image 350a-c is captured with each of the N image sensors 240a-c. At step 415 criteria for image comparison and/or analysis are chosen. In an example embodiment the criteria comprise detecting black areas in the image, brightness of the image, correlation of the images to look at similarities, color analysis, histogram analysis and/or the like. In a further example embodiment, the criteria are chosen automatically or the user of the apparatus 200 chooses the criteria. At steps 420 and 425 the images are compared to each other in order to find out whether an image 360a-c of an image sensor 240a-c comprises elements, for example a finger, not visible in other images 360a-c. In a further example embodiment, each image is analyzed 325 in order to find for example dark areas or blur that make the image unsuitable to be used in forming the final images. Based on the comparison and/or analysis, at step 430 the images 360a-b with no disturbance, i.e. having no artifacts, blockage, blur or the like, are chosen to be used in forming the final image. The final image is formed 435 using the chosen images 360a-b as hereinbefore described. In a further example embodiment, parts of an image 360c containing an undesired element are also used for forming the final image. In an example embodiment, if only the field of view 345a-c of a single image sensor is blocked, the image 360c different from the images of other images 360a-b is not used for forming the final image. In a further example embodiment, if the field of view 345a-c of several image sensors is blocked, further analysis and comparison of further parameters, such as hereinbefore described, is carried out.

[0080] FIG. 5 shows a schematic principle view of an apparatus 200 of an example embodiment. The apparatus 200 comprises a displaying surface 220 and a touch sensor 230 as hereinbefore described and an image sensor array 240 comprising image sensors 540a-j, two of which image sensors 540h-i are blocked by a finger 550 of the user of the apparatus. The touch, or the proximity, of the finger 550 is detected by the touch sensor 230. A skilled person appreciated that instead or in addition to the finger 550, the touch of another object, such as a stylus, pen or smudge or the like could be detected.

[0081] FIG. 6 shows a flow chart of a method of a further example embodiment. At step 610 the touch of the finger 550 is detected with the touch sensor 230. The location 560 of the touch, i.e. the area blocked or affected by the touch or proximity of the finger 550 is determined from the touch detection at 615. Based on the location of the affected area 560, the blocked image sensors 540h-i are disabled at 620. At step 625 an image is captured with M active, i.e. not disabled, image sensors 540a-g,j—M being a smaller number than the total number N of the image sensors—and the final image is formed 630 from these images as hereinbefore described. In a further example embodiment, the blocked image sensors 540h-i are not disabled and an image is captured with all N image sensors 540a-j, but the images captured with the blocked image sensors 540h-i are by default excluded from

further processing. In a further example embodiment, the disabled image sensors 540h-i are activated after a touch or proximity of an object is not detected anymore.

[0082] FIGS. 7a and 7b show a schematic principle view of an apparatus 200 of an example embodiment. The apparatus 200 comprises a displaying surface 220 and a touch sensor 230 as hereinbefore described and an image sensor array 240. The image sensor array 240 is configured to be adaptive, i.e. configured to be divided into one or more separate image sensors, i.e. groups 740a-k, 840a-h of image pixels, each image sensor 740a-k, 840a-h being configured to capture an image. The size and number of image sensors 740a-k, 840a-h is chosen in accordance with the operation of the device. In an example embodiment, the image sensors, and the adaptive lenses or the array of adaptive lenses (not shown), are arranged in accordance with the application being used by the user and run on the processor 210, or for example in accordance with control options, such as soft buttons, provided on the displaying surface 220. In an example embodiment the image sensors, and the adaptive lenses or the array of adaptive lenses (not shown), are arranged in such a way as to disable those elements of the sensor array 240 that are situated at a location most likely to be blocked by the user when operating the device while using a certain application. The size and number of the image sensors 740a-k, 840a-h that are not disabled is automatically chosen in such a way as to use as much of the unblocked surface of the image sensor array 240 as possible and/or in such a way as to ameliorate the processing speed and/or image quality. In a further example embodiment, the size, location and/or number of the image sensors 740a-k, 840a-h is adapted in a similar manner in accordance with the location of the touch detected with the touch sensor 230, i.e. the area of the image sensor array 240 blocked or affected by the touch or proximity of an object 550 is not used. A skilled person appreciates that the adaptive sensor array is useful for example in capturing a video during a video conference, when concurrently with capturing the video several finger locations and applications are used.

[0083] FIG. 8 shows a flow chart of a method of a further example embodiment. At step 810 the location of the touch or proximity of an object is detected with the touch sensor 230 and/or the used application is detected. At 815, based on the location of the affected area and/or based on the used application, the image sensor array 240, and the adaptive lenses or the array of adaptive lenses (not shown), is arranged to comprise image sensors 740a-k on the areas not affected by the touch or not likely to be used while using the detected application. At step 820 an image is captured with K₁ image sensors 740a-k and a first final image is formed at 825 as hereinbefore described. At step 830 a change in location of the touch or proximity is detected and/or a different application is detected. At step 835 the image sensor array adapts to the situation and the image sensor array 240, and the adaptive lenses or the array of adaptive lenses (not shown), is arranged to comprise image sensors 840a-h on the areas not affected by the touch or not likely to be used while using the detected application. At step 840 an image is captured with K₂ image sensors 840a-h and a second final image is formed 845 as hereinbefore described. In a further example embodiment, the area of the image sensor array 240 affected by the touch or proximity or likely to be blocked while using an application is not disabled, but the images captured with the affected area of the image sensor array 240 are by default excluded from further processing.